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Farming the seaweed Kappaphycus

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Farming the seaweed *Kappaphycus*

Total investment required for a module with five 500 m^2 multiple raft is about P54,000; for a module with ten 250 m^2 hanging long-line it is about P48,800. Return on investment after a year for multiple raft is 91%, thus payback period is nearly 11 months. ROI after a year for hanging long-line is 453%, payback is almost 3 months

Village women select seedlings of Kappaphycus *for transplanting (top) at this site in Iloilo*

Seaweed fanning is the top foreign exchange earner for the Philippines. *Kappaphycus,* the red seaweed locally known as 'guso' or 'tambalang' constitutes 80% of the Philippines seaweed export. In 2001, the Philippines is the third major seaweed producer in the world, after China and Korea. Japan ranked fourth.

Kappaphycus is sold in fresh and dried forms; however, dried seaweed has a greater demand though fresh seaweed is highly priced in restaurants. The three main seaweed products marketed are agar, alginate, and carrageenan. Carrageenan is used in meat preparation and processing, dairy products and desserts, beverages and juices, cosmetics and personal care products, petfood, air freshener gels, sauces and salad dressings, bread, noodles, and pasta.

In *Kappaphycus* farming, optimum salinity is 30 to 31 ppt, temperature 29 to 31°C, water depth of at least 4 m, and water movement of 20 to 40 m/min. The culture site should be free from freshwater run-off, and should have clear and clean water The site should be free from agricultural, industrial, and domestic pollutions.

Culture techniques commonly used include multiple raft long-line, and hanging long-line. In multiple raft, several bamboo poles that are arranged in parallel design are connected to one another with flat binders to which the seedlings are tied. In hanging long-line, floaters are used to hold the cultivation ropes in place, and sand bags wrapped with nets are used as anchors. Appropriate use of culture technique based on culture site, seedling variety, and season is very important.

There are many varieties of *Kappaphycus* for farming. It is very important to use best quality seedlings that are brittle and young, free from epiphytes (undesirable seaweeds), and thallus whitening. Optimum stocking density is 0.5 to 1.0 kg per m^2. Periodic visits, about three to four times a week, are necessary to re-tie loose cultivation ropes and seedlings, to remove epiphytes, and to remove deposited silt and sediments. *Kappaphycus* is harvested after 45 to 60 days of culture.

Technology_presentor and contact person

Anicia Hurtado is a Senior Scientist at AQD (see also page 5, this issue). She joined AQD's Farming Systems Section in May 1988. She holds several degrees: BSc Pre-Medicine (1970) and BSc Biological Sciences (1971) from the University of the East; MA Biology Education from De La Salle University (1980); and M Agriculture (1985) and Doctorate of Agriculture (1988) from Kyoto University. A Monbusho scholarship from the Government of Japan funded her studies at Kyoto.

Hurtado has been the leader of AQD's Seaweeds Project since 1988, and she has conducted several studies on the biology, ecology, fanning, and colloid characteristics of the red algae *Gracilaria, Kappaphycus* and *Eucheuma.* She recently finished a six-month biotechnology course on seaweeds (tissue culture, mutagenesis, cell-cell fusion) at Northeastern University in Boston, USA. She is now involved in seaweed biotechnology research, primarily on *Kappaphycus* and *Eucheuma.* She is also actively involved in AQD's coastal resources management program.

Hurtado has published several scientific papers in International and local journals, an extension manual on *Kappaphycus* farming, and a monograph, *Seaweeds of Panay.* <hurtado@aqd.seafdec.org.ph>